## Remarks and Arguments

Claims 1-37 have been re-presented for examination.

Claims 1-3, 5-12, 14-23 and 25-37 have been rejected under 35 U.S.C. §103(a) as obvious over U.S. Patent Publication No. 2002/0052960 (Trisno) in view of U.S. Patent No. 6,697,360 (Gai.) The examiner asserts that the Trisno publication discloses a system that automatically assigns addresses to nodes in a network region as claimed with the exception that Trisno does not disclose assigning addresses to nodes outside of a single region. However, the examiner asserts that the Gai patent discloses a system that automatically assigns addresses to nodes in a plurality of subnetworks. The examiner concludes that it would have been obvious to modify Trisno to expand the disclosed address assignment technique to subnetworks in order to allow Trisno to manage and configure larger networks.

The present invention is a system and method for configuring a multi-link network. In accordance with the disclosed system and method, a single router, called a specified router, is selected to represent each link. Each node in the network is given an address that comprises a plurality of concatenated fields including a region field, a link field and a node field. Nodes on a link can be given node field numbers in any manner as long as the node field numbers are unique for each node on that link. Each link is also given a unique link number.

In a first embodiment of the invention, the link number is determined by the negotiation between the specified routers. In particular, each router chooses a link number and broadcasts that link number to all other specified routers. If no other routers have chosen that link number, that router uses the chosen link number. However, if a router receives a message that another router has chosen the same link number, then a conflict mechanism is used to determine which router will use that link number. The other router then chooses a new link number. This process is facilitated by storing the link numbers already chosen in each specified router so that a router will not choose a link number that has already been reserved by another router.

In a second embodiment of the disclosed system and method, the specified routers participate in a distributed selection process by which a single address-assigning specified router is selected. Then each router obtains a link number from the

address assigning router by sending a request message to that router and receiving a reply message that includes the assigned link number.

The Trisno publication discloses a distributed system and method for assigning addresses in a network in which each node in the network is given a unique number. As disclosed, this unique number is the Media Access Control (MAC) number for that node. These unique numbers are then exchanged by the nodes. When each node receives a unique number (that is not its own assigned number) it generates a complete network address from that number. The address could be generated by using a table or a computation and is stored along with the unique node number. However, each node uses the same method to generate an address from a unique node number. Therefore, after all node numbers have been exchanged, all nodes will have a complete set of node number/address pairings (Trisno, page 1, paragraph [0012]). In this system each node will have a unique network address. Nodes on a subnet link may very well have different link numbers so that the network addresses are not hierarchical. This can cause routing problems on networks with subnet links.

The examiner proposes to combine the Trisno system with the Gai system in order to allow the Trisno system to assign addresses to subnets. The Gai system uses centralized DHCP servers to assign the network addresses. In particular, a node presents a unique address (a MAC address as disclosed) to one or more DHCP servers. The servers then return a complete network address, and, if the node is a router and requests subnet addresses, the DHCP servers return those complete subnet addresses as well (Gai, column 5, lines 38-48). Consequently, it is difficult to see how Trisno can be combined with Gai since Trisno is a distributed system and Gai uses a centralized server. One skilled in the art would not seek to combine the teachings of Trisno and Gai since, Trisno's stated purpose for using a distributed system is to eliminate a central server such as that used in Gai. See, for example, Trisno page 2, paragraph 0015.

Further, even if these references were combined as suggested by the examiner they would still not teach the invention as claimed. In particular, both Trisno and Gai operate in the same manner and, therefore, their combination cannot teach anything

different. In Trisno, a node sends a unique node MAC code number to all other nodes. A complete network address is generated from this unique node number. In Gai, a unique MAC code number is presented to a DHCP server and a complete network address is returned. In both cases the MAC code/address pair is stored for later reference. However, in the present invention only the link number portion of the complete network address is determined by negotiation among specified routers or from an address-assignment node. For example, claim 1 is illustrative. It recites, first assigning a node number for each node, in lines 6-8, "for each node of each link, assigning a group-wise unique node number to a first field of the network-layer address of the node."

Then at lines 9-12, claim 1 recites "receiving messages from the specified routers of the other links, the message from each specified router containing a number selected to be used as a region-wise unique link number for the associated link (emphasis added)." This link number is then in association with the respective links in a local database as set forth in claim 1, lines 12-13. Then the specified router selects "a number to be used as a region-wise unique link number for the link in a second field of the network layer addresses of the nodes on the link, the selected number being a number not associated with another link in the local database." as set forth in claim 1, lines 14-17. Finally, the router generates a message containing the selected [link] number and propagates the message within the network region for receipt by the other specified routers (lines 18-20.) Thus, as recited in claim 1, the claimed number assignment process differs from that disclosed in the combination of Trisno and Gai because a network address, which is composed of at least two fields, is assigned, one field to each node and a second field to each link. The messages passed between specified routers contain a link number (part of the network address) not the unique MAC number as disclosed in Trisno and Gai. Further, the local databases store a link number/ link ID pair for each link rather than a MAC number/network address pair as

disclosed in Trisno and Gai. Consequently, claim 1 patentably distinguishes over the cited combination of Trisno and Gai.

Claims 2- 3 and 5-10 are dependent upon claim 1 and incorporate the limitations thereof. Therefore, they distinguish over the combination of Trisno and Gai in the same manner as claim 1. In addition, these claims contain limitations not taught or suggested by the combination of Trisno and Gai. For example, claim 2 recites the negotiation process carried out by the specified routers to detect and deal with conflicts in the assignment of the link number. Claim 2 recites, in lines 3-5, monitoring messages received from other specified routers, In lines 6-8, claim 2 recites using a conflict resolution criterion if two routers select the same link number and choosing another link number if another router has a superior claim to the selected link number (lines 9-10). In contrast, no negotiation is necessary in the combination of Trisno and Gai because a unique MAC number is always presented and a unique network address is determine from that unique number. Since the network address is always determined from the unique MAC number in the same manner, the same network address cannot be generated from two different MAC numbers. The examiner points to Trisno, Figure 3, steps 310-360 as disclosing the recited negotiation. However, as set forth in Trisno, unique MAC numbers is circulated among the nodes. The only processing done in response to receipt of that number is to create a new network address if none exists in the local database or to update any existing record. Trisno does not disclose changing a previously selected network address in response to an incoming MAC number. Thus, claim 2 patentably distinguishes over the cited combination for this additional reason.

Similarly, claim 3 recites that a third field of the network address is assigned a region number. In both Trisno and Gai the entire network address is assigned by either a node or a DHCP server. Therefore, claim 3 patentably distinguishes over the cited combination.

Claims 9 and 10 recite that a specified router is selected for each link by means of a distributed selection process. The examiner asserts that in Trisno, any node could

be a specified router. However, as recited in claim 1, the specified node performs certain actions that are not performed by the Trisno nodes. In addition, no distributed selection process is disclosed in Trisno to separate any node from any other node. In Gai, the DHCP servers are fixed and pre-selected. Consequently, claims 9 and 10 patentably distinguish over the cited references.

Claim 11 recites the embodiment of the invention in which link numbers are obtained from an address-assigning node in response to request messages. For example, claim 11 recites, in lines 11-16, that the address-assigning node performs the steps of "receiving the request messages from the specified routers of the links, (ii) assigning a region-wise unique link number to each link for which a request message has been received, (iii) generating link number assignment messages containing the assigned link numbers, and (iv) propagating the link number assignment messages to the specified routers..." The link number is later combined with the node number in the specified router that made the request as set forth in lines 17-20 - "at the specified router of each link, receiving one of the link number assignment messages propagated by the address-assigning node and assigning the link number from the received link number assignment message to a second field of the network-layer addresses of the nodes of the link." In Gai, an entire network address is returned in response to a request. The node making the request does not have to compose the network address as set forth in claim 11. Therefore, the combination of Trisno and Gai does not teach or suggest the claimed invention.

Claims 12 and 14-24 are dependent upon claim 11 and incorporate the limitations thereof. Therefore, they distinguish over the combination of Trisno and Gai in the same manner as claim 11. In addition, these claims contain further limitations not disclosed or suggested by the cited combination of references. For example, claims 18-19 contain limitation that parallel those in claim 9 and 10. As discussed above these latter claims patentably distinguish over the cited references and, accordingly, so do claims 18-19.

Claims 20 and 21 recite that the address-assignment node is selected by means of a distributed selection process. The examiner asserts that in Trisno, any node could be an address-assignment node. However, as recited in claim 11, the address-assignment node performs certain actions that are not performed by the Trisno nodes. In addition, no distributed selection process is disclosed in Trisno to separate any node from any other node. In Gai, the DHCP servers are fixed and pre-selected. Consequently, claims 20 and 21 patentably distinguish over the cited references.

Claim 22 recites that the local database in the address-assignment node stores link number/link ID pairs. The examiner equates this to the MAC number/network address table in the Trisno nodes. However, as discussed above, the link number is not equivalent to a full network address. Further claim 23 recites that the link number can be reassigned upon request if no conflict exists. The examiner equates this to the updating of the Trisno node table when a new MAC address is received. However, in Trisno, there is a one-to-one correspondence between MAC numbers and network addresses. Thus, when a MAC number is received that already corresponds to a MAC number/network address pair stored in the node table, the table is merely updated for example, by changing the "time-to-live" value. The network address is not reassigned. Consequently, claim 23 patentably distinguishes over the cited combination of references.

Claims 25, 27, 30, 32, 33 and 36 contain limitations that parallel those in claim 1. Consequently, they distinguish over the cited combination of references in the same manner as claim 1.

Claims 26, 28, 29, 31, 34, 35 and 37 contain limitations that parallel those in claim 11. Consequently, they distinguish over the cited combination of references in the same manner as claim 11.

Claims 4 and 13 have been rejected under 35 U.S.C. §103(a) as obvious over Trisno in view of Gai and further in view of U.S. Patent No. 6,578,086 (Regan.) The examiner comments that the combination of Trisno and Gai disclose all of the recited limitations except that they do not disclose sending message via link-state packets.

However, the examiner comments that Regan shows a network management system in which link-state packets are used for network management messages. Consequently, the examiner concludes that it would have been obvious to use link-state packets for the messages in Trisno and Gai in order to improve the overall reliability of the system.

Regan discloses a method for reconfiguring a network using a distance vector algorithm to update link state information in order to reduce the time taken to reconfigure layer 2 of the network when the network is changed. Although it uses link-state packets to transmit network configuration information, Regan is not concerned with assigning network addresses as are Trisno and Gai. Consequently, one skilled in the art would not look to Regan for a solution to problems in Trisno and Gai. The examiner provides only a very general motive of "a desire to stay current with the technology." Further, claims 4 and 13 are dependent on claims 1 and 11, respectively and incorporate the limitations thereof. Regan combined with Trisno and Gai cannot change the basic operation of both Trisno and Gai as discussed above, since Regan operates in a completely different manner. Consequently, claims 4 and 13 patentably distinguish over the cited combination of references.

In light of the forgoing amendments and remarks, this application is now believed in condition for allowance and a notice of allowance is earnestly solicited. If the examiner has any further questions regarding this amendment, he is invited to call applicants' attorney at the number listed below. The examiner is hereby authorized to charge any fees or direct any payment under 37 C.F.R. §§1.17, 1.16 to Deposit Account number 02-3038.

Respectfully submitted

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